

#83

HEAO 1

HIGH ENERGY X-RAY SOURCE CATALOG

77-075A-04E

REQ. AGENT
SAR

RAND NO.
V0295

ACQ. AGENT
SJK

HEAO 1

HIGH ENERGY X-RAY SOURCE CATALOG

77-075A-04E

This data set catalog consists of 1 magnetic tape. The tape is 9-track, 1600 BPI, BINARY, and has 4 files of data. The tape was created on a S/230 computer. The D and C numbers are as follows:

<u>D#</u>	<u>C#</u>
D-66242	C-24877

YY-075A-04E

CENTER FOR SPACE RESEARCH
MASSACHUSETTS INSTITUTE OF TECHNOLOGY



MIT Center for Space Research
Documentation of Data from the
HEAO-1 A4 Experiment
Submitted to the
National Space Science Data Center

Submittal #2

June 1985

MIT Center for Space Research

Documentation of Data from the
HEAO-1 A4 Experiment

Submitted to the

National Space Science Data Center

June 1985

MIT HEAO-1 (A4) NSSDC SUBMITTAL #2

Table of Contents

- 1.0 Introduction
- 2.0 Visual Displays of Sky Survey Data (Skymaps)
 - 2.1 List of Skymaps; Physical Description
 - 2.2 Skymaps - Additional Notes
- 3.0 Catalog of High-Energy X-Ray Sources
 - 3.1 Machine-Readable Catalog

Table 1: List of Photographic Displays of HEAO-1 (A4) Sky Survey Data

Table 2: Broad Energy Channel Definitions

Table 3: Printout of File "CTASCII"

Table 4: Record Structure of Catalog File (non-ASCII)

Appendix A: "The HEAO-1 (A4) Catalog of High-Energy X-Ray Sources"

1.0 Introduction

This document supports the second submittal of HEAO-1 (A4) High-Energy X-Ray Sky Survey Data to the National Space Science Data Center (NSSDC). The submittal also includes a set of visual displays of the data which are recorded on photographic film and the first HEAO-1 (A4) Catalog of High-Energy X-Ray Sources in both printed and machine-readable (i.e., digital magnetic tape) forms. This submittal follows the initial submittal of HEAO-1 (A4) High-Energy X-Ray Sky Survey Data to the NSSDC, which included the reduced data base from which the sky survey results were obtained, a machine readable version of the data used to create the visual displays of the sky survey data, and documentation describing the geometry of the survey, analysis procedures, data formats, and the instrument properties.

2.0 Visual Displays of Sky Survey Data (Skymaps)

We have made a large number of visual displays of the sky survey data by photographing a computer-generated display on a CRT. These displays are representations of the data contained in the Skymap Display Files submitted in our first NSSDC submittal. Additional displays which combine data from a number of the Skymap Display Files are also included in this submittal.

2.1 List of Skymaps; Physical Description

Table 1 contains a comprehensive list of the skymap films and schematic diagrams (i.e., grids; see Section 2.2) which are included in this submittal. Each 3" x 4" film is properly oriented for direct viewing with the emulsion side down and the sticker with the film serial number on the upper right. The user should note that the coordinate system is oriented so that θ increases from the bottom to the top of each skymap. Therefore, for those skymaps which

are not superpositions of data from different epochs, time also increases from the bottom to the top of the skymap.

The films were made using a Data General Eclipse S/230 computer controlling a high-resolution Tektronix 606B monitor through a D/A converter board. A Tektronix oscilloscope camera (Type C-12) was used to photograph the monitor at f/16 on Polaroid Type 665 Positive/Negative Black and White Land film. The original films being submitted to the NSSDC are the negative portions of the Type 665 film packets and are actually negative reproductions of the monitor displays. However, since the light/dark sense of these films is the one preferred for use, they may be regarded as positive images. The columns in Table 1 are as follows:

- 1) List No.: A sequence number for the order of presentation in Table 1.
- 2) Serial No.: A unique identifying number written on the film or on a sticker on the film.
- 3) Maps: The technical description of the data displayed on the film. The names of the form Mab.Fc are described in Section 2.3 of the documentation for submittal #1. Designations of the form Mb.Fc are not described in submittal #1 but follow the same conventions. Briefly, "a" is the epoch code (1, 2, 3, or T), "b" is the energy band code (one of the letters A-F or L, see Table 2), and "c" is the detector number (3 or 6 for detector D3 or D6, respectively). The second skymap in the list for a given film is always at the top when oriented for direct viewing (see above). Since displays with designations of the form Mb.Fc show data from a complete mission timeline, no epoch code is necessary for its description.

- 4) Index Range (inclusive): The column labeled "PHI" gives the displayed range of integer bin numbers for the azimuth coordinate, ϕ , (increasing from left to right). The column labeled "THETA" gives the

displayed range of integer bin numbers for the spin-axis ecliptic longitude coordinate, T, to bin number was done according to

$$IAZ = \text{INT} (\phi/0.4^\circ)$$

$$ILONG = \text{INT} (\theta/0.8^\circ)$$

where INT is the function which extracts the integer part of the argument (see Section 1.1 of the documentation for Submittal #1). The boxes drawn around all six-month maps (list nos. 1-24, 61-66, 79-82, 89-91) are all the same although the index ranges of the displayed data vary somewhat. Similarly, the boxes around all 18-month maps (list nos. 25-36, 67-78, 83-84, 92-93) are all identical as are the boxes around the enlargements of the central galactic plane region (list nos. 37-60, 85-88, 94-95).

5) Contrast: R stands for regular (i.e., medium) contrast. H stands for high contrast.

6) Remarks: Those skymaps noted with "GC BLOWUP" are enlargements of the central galactic plane region. The livetime maps (i.e., exposure maps) are all unsmoothed (see below).

2.2 Skymaps - Additional Notes

The energy range codes A, B, C, and D were defined in Submittal #1. The codes E, F stand for composite energy bands equivalent to the A+B and A+B+C bands, respectively. The code L indicates livetime data. Table 2 is a more complete version of Table A1 from Submittal #1.

Appendix A is a reprint from The Astrophysical Journal Supplement Series, and contains reproductions of selected skymaps and schematic diagrams. (An explanation of the schematic diagrams may be found in this reprint along with tables which give the names of the sources whose positions are indicated in the schematic diagrams.

3.0 Catalog of High-Energy X-Ray Sources

A study of those sources which are clearly evident in the visual displays of the sky survey data has been done. The results are included in catalog form in the manuscript found in Appendix A. The catalog has also been recorded in two formats on digital magnetic tape. These formats are described below.

3.1 Machine-Readable Catalog

The physical description and format of the magnetic tape containing the HEAO-1 (A4) Catalog follows the form of the tapes described in and submitted in the MIT HEAO-1 (A4) NSSDC Submittal #1. The only exception is that a short tape, not a 2400' tape, contains the machine-readable catalog. All disk files have been written onto the tape using the GDUMP format.

Tape files 0 and 1 contain identical copies of a disk file named CTASCII which contains an ASCII transcription of the catalog. Table 3 is a printed version of CTASCII. The user should note that this file contains the ASCII character "HT", which corresponds to a 7-bit octal code of 011_8 , and which is used to tab to the next column with a column number of the form $8N+1$ where N is an integer. The disk file CTASCII has a total length of 35620 bytes.

Tape files 2 and 3 each contain an identical copy of a disk file named CTRCRD. The format of this disk file is described in Table 4. CTRCRD contains one record per source and has a total length of 18144 bytes. The user should note the changes in notation used in CTRCRD which are listed at the bottom of Table 4.

TABLE 1: LIST OF PHOTOGRAPHIC DISPLAYS OF HEAD-1 A4 SKY SURVEY DATA.

LIST NO.	SERIAL NO.	MAPS	INDEX RANGE (INCLUSIVE)			CONTRAST	REMARKS
			PHI	THETA			
1	38	M1A.F3,M1A.F6	0-899	184-424		R	
2	40	M1B.F3,M1B.F6	0-899	184-424		R	
3	41	M1C.F3,M1C.F6	0-899	184-424		R	
4	42	M1D.F3,M1D.F6	0-899	184-424		R	
5	43	M1E.F3,M1E.F6	0-899	184-424		R	
6	37	M1F.F3,M1F.F6	0-899	184-424		R	
7	29	M2A.F3,M2A.F6	0-899	168-424		R	
8	30	M2B.F3,M2B.F6	0-899	168-424		R	
9	31	M2C.F3,M2C.F6	0-899	168-424		R	
10	32	M2D.F3,M2D.F6	0-899	168-424		R	
11	33	M2E.F3,M2E.F6	0-899	168-424		R	
12	36	M2F.F3,M2F.F6	0-899	168-424		R	
13	44	M3A.F3,M3A.F6	0-899	168-376		R	
14	45	M3B.F3,M3B.F6	0-899	168-376		R	
15	46	M3C.F3,M3C.F6	0-899	168-376		R	
16	47	M3D.F3,M3D.F6	0-899	168-376		R	
17	48	M3E.F3,M3E.F6	0-899	168-376		R	
18	49	M3F.F3,M3F.F6	0-899	168-376		R	
19	52	MTA.F3,MTA.F6	0-899	168-424		R	
20	55	MTB.F3,MTB.F6	0-899	168-424		R	
21	54	MTC.F3,MTC.F6	0-899	168-424		R	
22	56	MTD.F3,MTD.F6	0-899	168-424		R	
23	57	MTE.F3,MTE.F6	0-899	168-424		R	
24	58	MTF.F3,MTF.F6	0-899	168-424		R	
25	61	MA.F3	0-899	184-826		R	
26	60	MB.F3	0-899	184-826		R	
27	62	MC.F3	0-899	184-826		R	
28	63	MD.F3	0-899	184-826		R	
29	64	ME.F3	0-899	184-826		R	
30	65	MF.F3	0-899	184-826		R	
31	66	MA.F6	0-899	184-826		R	
32	67	MB.F6	0-899	184-826		R	
33	68	MC.F6	0-899	184-826		R	
34	69	MD.F6	0-899	184-826		R	
35	70	ME.F6	0-899	184-826		R	
36	149	MF.F6	0-899	184-826		R	
37	120	M1A.F3,M1A.F6	525-774	184-274		R	GC BLOWUP
38	121	M1B.F3,M1B.F6	525-774	184-274		R	GC BLOWUP
39	122	M1C.F3,M1C.F6	525-774	184-274		R	GC BLOWUP
40	123	M1D.F3,M1D.F6	525-774	184-274		R	GC BLOWUP
41	124	M1E.F3,M1E.F6	525-774	184-274		R	GC BLOWUP
42	125	M1F.F3,M1F.F6	525-774	184-274		R	GC BLOWUP
43	89	M2A.F3,M2A.F6	525-774	168-274		R	GC BLOWUP
44	90	M2B.F3,M2B.F6	525-774	168-274		R	GC BLOWUP
45	91	M2C.F3,M2C.F6	525-774	168-274		R	GC BLOWUP
46	92	M2D.F3,M2D.F6	525-774	168-274		R	GC BLOWUP
47	93	M2E.F3,M2E.F6	525-774	168-274		R	GC BLOWUP
48	94	M2F.F3,M2F.F6	525-774	168-274		R	GC BLOWUP

LIST NO.	SERIAL NO.	MAPS	INDEX RANGE (INCLUSIVE)			CONTRAST	REMARKS
			PHI	THETA			
49	101	M3A.F3,M3A.F6	525-774	168-274		R	GC BLOWUP
50	102	M3B.F3,M3B.F6	525-774	168-274		R	GC BLOWUP
51	103	M3C.F3,M3C.F6	525-774	168-274		R	GC BLOWUP
52	104	M3D.F3,M3D.F6	525-774	168-274		R	GC BLOWUP
53	105	M3E.F3,M3E.F6	525-774	168-274		R	GC BLOWUP
54	106	M3F.F3,M3F.F6	525-774	168-274		R	GC BLOWUP
55	83	MTA.F3,MTA.F6	525-774	168-274		R	GC BLOWUP
56	84	MTB.F3,MTB.F6	525-774	168-274		R	GC BLOWUP
57	85	MTC.F3,MTC.F6	525-774	168-274		R	GC BLOWUP
58	86	MTD.F3,MTD.F6	525-774	168-274		R	GC BLOWUP
59	87	MTE.F3,MTE.F6	525-774	168-274		R	GC BLOWUP
60	88	MTF.F3,MTF.F6	525-774	168-274		R	GC BLOWUP
61	119	MTA.F3,MTA.F6	0-899	168-424		H	
62	114	MTB.F3,MTB.F6	0-899	168-424		H	
63	115	MTC.F3,MTC.F6	0-899	168-424		H	
64	116	MTD.F3,MTD.F6	0-899	168-424		H	
65	117	MTE.F3,MTE.F6	0-899	168-424		H	
66	118	MTF.F3,MTF.F6	0-899	168-424		H	
67	126	MA.F3	0-899	184-826		H	
68	127	MB.F3	0-899	184-826		H	
69	128	MC.F3	0-899	184-826		H	
70	129	MD.F3	0-899	184-826		H	
71	130	ME.F3	0-899	184-826		H	
72	76	MF.F3	0-899	184-826		H	
73	131	MA.F6	0-899	184-826		H	
74	132	MB.F6	0-899	184-826		H	
75	133	MC.F6	0-899	184-826		H	
76	134	MD.F6	0-899	184-826		H	
77	135	ME.F6	0-899	184-826		H	
78	77	MF.F6	0-899	184-826		H	
79	138	M1L.F3,M1L.F6	0-899	184-424		R	UNSMOOTHED
80	136	M2L.F3,M2L.F6	0-899	168-424		R	UNSMOOTHED
81	137	M3L.F3,M3L.F6	0-899	168-376		R	UNSMOOTHED
82	139	MTL.F3,MTL.F6	0-899	168-424		R	UNSMOOTHED
83	140	ML.F3	0-899	194-826		R	UNSMOOTHED
84	141	ML.F6	0-899	184-826		R	UNSMOOTHED
85	142	M1L.F3,M1L.F6	525-774	184-274		R	GC BLOWUP, UNSMOOTHED
86	143	M2L.F3,M2L.F6	525-774	168-274		R	GC BLOWUP, UNSMOOTHED
87	144	M3L.F3,M3L.F6	525-774	168-274		R	GC BLOWUP, UNSMOOTHED
88	145	MTL.F3,MTL.F6	525-774	168-274		R	GC BLOWUP, UNSMOOTHED
89	167	SCHEMATIC,6 MOS.	0-899	168-424			WITH SOURCES
90	169	SCHEMATIC,6 MOS.	0-899	168-424			RA,DEC GRID
91	170	SCHEMATIC,6 MOS.	0-899	168-424			THETA,PHI GRID
92	171	SCHEMATIC,18 MOS.	0-899	168-826			WITH SOURCES
93	172	SCHEMATIC,18 MOS.	0-899	168-826			RA,DEC GRID
94	174	SCHEMATIC,GC BLOWUP	525-774	168-274			WITH SOURCES
95	175	SCHEMATIC,GC BLOWUP	525-774	168-274			RA,DEC GRID

TABLE 2BROAD ENERGY CHANNEL DEFINITIONS

DETECTOR	BROAD CHANNEL DESIGNATION	MPHA CHANNELS (INCLUSIVE)	NOMINAL ENERGY RANGE (keV)
D3	A	7-9	13-25
	B	10-14	25-40
	C	15-29	40-80
	D	30-63	80-180
	E	7-14	13-40
	F	7-29	13-80
	L	livetime data	
D6	A	7-10	13-25
	B	11-15	25-40
	C	16-32	40-80
	D	33-63	80-180
	E	7-15	13-40
	F	7-32	13-80
	L	livetime data	

TABLE 3: PRINTOUT OF FILE "CTASCII"

COUNT RATE (CTS/S) - 1 SIGMA ERROR													
CHANNEL CODE - APPROXIMATE ENERGY BAND (keV)													
SOURCE NAME	RA(1950) DEC	ECLIPTIC LONGITUDE LATITUDE	SCAN DATES	FIT CODE	A			B			C		
					(13-25)	(25-40)	(40-80)	(25-40)	(40-80)	(80-100)	D	A+B+C	(13-80)
0050-727 (A)	12.58	312.07	10/11/77 - 4/11/78 -	NF	0.02	0.06	0.08	0.02	NF	NF	0.04	.11	
SMC X-3	-72.71	-64.35	5/23/78 - 10/11/78 -	0.10	.08	0.04	0.02	NF	NF	NF	0.10	.14	
S,A			11/21/78 -	0.03	.03	0.02	0.02	NF	0.03	0.03	0.08	.04	
			ALL DATA	0.03	.05	0.04	0.04	0.03	0.05	0.01	0.10	.08	
0052-739 (A)	13.23	311.76	10/10/77 - 4/11/78 -	0.27	.02	0.18	.07	NF	0.02	.02	0.50	.12	
SMC X-2	-72.95	-64.62	5/23/78 - 10/10/78 -	0.01	.08	NF	NF	NF	NF	NF	0.04	.14	
S,A			11/21/78 -	NF	NF	0.03	.03	NF	NF	NF	NF	NF	
			ALL DATA	0.14	.05	0.07	.05	0.01	.05	NF	0.22	.08	
0115+634	18.81	49.15	1/24/78 - 7/26/78 -	0.65	.02	0.25	.02	0.04	.02	NF	0.93	.04	
U,S,M,H	63.48	49.74	8/22/78 -	0.02	.03	0.03	.02	0.05	.03	0.02	0.10	.04	
			ALL DATA	0.41	.02	0.16	.02	0.04	.02	NF	0.60	.03	
0115-737	18.94	311.56	10/ 8/77 - 4/ 9/78 -	0.25	.02	0.11	.02	0.03	.02	NF	0.39	.03	
SMC X-1	-73.71	-65.43	5/24/78 - 10/ 8/78 -	0.50	.02	0.25	.02	0.07	.02	NF	0.82	.04	
U,A,M			11/23/78 -	0.49	.03	0.34	.03	0.10	.03	0.05	0.94	.05	
			ALL DATA	0.38	.01	0.21	.01	0.06	.01	0.01	0.65	.02	
0316+413	49.12	57.92	8/22/77 - 2/ 6/78 -	0.21	.05	0.09	.05	0.13	.04	NF	0.43	.08	
U,A,M	41.33	22.29	8/25/78 - 8/ 8/78 -	0.21	.02	0.09	.02	0.09	.02	0.02	0.39	.04	
*PERSEUS CLUSTER			8/27/78 -	0.29	.03	0.14	.03	0.15	.03	0.01	0.58	.05	
			ALL DATA	0.24	.02	0.10	.02	0.12	.02	0.01	0.46	.03	
0352+309 (B)	58.06	62.51	8/22/77 - 2/11/78 -	0.08	.05	0.06	.06	0.07	.05	0.04	.07	.09	
U,A,S,H	30.90	10.40	3/ 1/78 - 8/13/78 -	0.05	.03	0.03	.03	0.03	.04	NF	0.11	.06	
**PER			8/31/78 -	0.04	.04	NF	0.01	0.01	.04	NF	0.04	.07	
			ALL DATA	0.05	.02	0.02	.02	0.03	.02	NF	0.10	.04	
0531+219	82.88	83.40	9/ 3/77 - 3/ 5/78 -	11.12	.09	7.84	.08	6.56	.07	1.96	.06	25.55	
*CRAB NEBULA	21.98	-1.36	3/22/78 - 9/21/78 -	11.16	.08	6.69	.07	7.07	.07	2.34	.05	26.98	
			ALL DATA	11.38	.11	8.78	.10	7.14	.10	2.32	.07	27.34	
				11.20	.05	8.43	.05	6.92	.04	2.22	.03	26.58	
0532-664	83.28	358.99	8/22/77 - 1/26/78 -	0.33	.01	0.24	.01	0.09	.01	NF	0.66	.02	
LMC X-4	-66.40	-87.28	1/25/78 - 7/28/78	0.24	.01	0.19	.01	0.07	.01	0.01	0.50	.02	

U,A,S		?/29/78 - 1/ 8/79		ALL DATA		0.24 .01 0.28 .01		0.06 .01 0.07 .01		NF NF		0.51 .02 0.57 .01		
0535+262	A,S	83.95	84.57	9/ 4/77 -	9/22/77	0.16 .03	0.11 .03	0.11 .03	0.02 .04	0.39 .06	NF	0.51 .02	0.57 .01	
		26.28	2.89	3/ 6/78 -	3/24/78	0.02 .03	0.08 .03	0.04 .03	0.13 .03	0.14 .05	NF	0.31 .05	0.54 .08	
				9/ 5/78 -	9/22/78	0.26 .05	0.33 .05	0.08 .05	0.03 .06	0.66 .09	NF	0.39 .07	0.43 .04	
0614+091	U,S,M,A,H	93.59	93.66	9/13/77 -	10/ 1/77	0.15 .03	0.11 .03	0.03 .03	0.01 .03	0.30 .04	NF	0.30 .04	0.31 .05	
		9.14	-14.31	3/15/78 -	4/ 2/78	0.15 .03	0.09 .03	0.08 .03	0.01 .02	0.02 .02	NF	0.31 .05	0.34 .03	
				9/13/78 -	10/ 2/78	0.16 .05	0.15 .05	0.23 .05	0.02 .05	0.02 .05	NF	0.31 .05	0.34 .03	
0833-458	U,M,A	128.41	152.77	11/ 3/77 -	12/ 9/77	2	0.16 .02	0.10 .02	0.04 .02	0.01 .02	0.31 .03	NF	0.31 .03	0.32 .04
*VELA PULSAR		-45.01	-60.40	5/ 5/78 -	6/10/78	3	0.16 .02	0.08 .02	0.06 .02	0.01 .02	0.30 .04	NF	0.30 .04	0.32 .04
				11/ 3/78 -	12/10/78	4	0.22 .03	0.13 .03	0.07 .03	0.01 .02	0.30 .04	NF	0.30 .04	0.32 .04
0900-403	VELA X-1	135.06	156.42	11/10/77 -	12/10/77	2	2.73 .03	1.99 .03	0.51 .02	0.01 .01	0.42 .05	NF	0.42 .05	0.44 .06
		-40.36	-53.95	5/12/78 -	6/11/78	3	3.11 .04	2.66 .04	0.78 .03	0.01 .01	0.33 .02	NF	0.33 .02	0.35 .03
				11/10/78 -	12/10/78	4	3.62 .05	2.94 .05	0.88 .04	0.01 .01	0.33 .02	NF	0.33 .02	0.35 .03
0918-549	U,S,M,A,H	132.73	178.23	11/27/77 -	1/ 7/78	2	0.16 .02	0.07 .02	0.64 .02	0.00 .02	0.27 .03	NF	0.27 .03	0.28 .03
		-54.99	-64.03	5/28/78 -	7/ 8/78	3	0.07 .02	0.09 .02	0.07 .02	0.04 .02	0.23 .04	NF	0.23 .04	0.24 .04
				11/27/78 -	1/ 7/79	4	0.17 .04	0.02 .03	0.07 .04	0.03 .04	0.27 .06	NF	0.27 .06	0.28 .06
1119-603	CEN X-3	169.76	208.64	1/ 1/78 -	2/ 2/78	2	1.40 .03	0.57 .02	0.10 .02	0.00 .02	2.07 .04	NF	2.07 .04	2.08 .04
		-60.35	-56.31	7/ 3/78 -	8/ 4/78	3	2.64 .04	0.93 .03	0.18 .03	0.04 .03	3.76 .06	NF	3.76 .06	3.77 .06
				ALL DATA	T	0.13 .61	0.07 .01	0.06 .01	0.02 .01	0.25 .02	NF	0.25 .02	0.26 .02	
1145-619	S,A,E	176.38	214.65	1/ 8/78 -	2/ 8/78	2	0.27 .03	0.32 .03	0.13 .02	0.04 .03	0.20 .06	NF	0.20 .06	0.21 .06
		-61.93	-55.19	7/ 9/78 -	8/ 9/78	3	0.01 .04	0.14 .03	0.10 .03	0.04 .03	0.54 .04	NF	0.54 .04	0.55 .04
1208+396	U,A,M	181.97	163.26	11/21/77 -	12/13/77	0.18 .02	0.17 .02	0.15 .02	0.04 .03	0.20 .06	NF	0.20 .06	0.21 .06	
*NGC 4151		39.79	36.69	5/23/78 -	6/14/78	0.29 .03	0.32 .03	0.34 .03	0.12 .03	0.51 .04	NF	0.51 .04	0.52 .04	
				11/21/78 -	12/13/78	0.36 .04	0.24 .04	0.20 .04	0.08 .04	0.80 .07	NF	0.80 .07	0.81 .07	
1223-624	GX301-2	185.96	220.88	1/15/78 -	2/13/78	2	3.21 .04	2.15 .03	0.36 .03	0.03 .03	5.76 .06	NF	5.76 .06	5.77 .06
		-52.49	-52.53	7/16/78 -	8/15/78	3	2.36 .04	1.78 .04	0.28 .03	0.03 .03	4.39 .07	NF	4.39 .07	4.40 .07
				ALL DATA	T	2.85 .03	1.98 .03	0.33 .02	0.05 .02	5.17 .04	NF	5.17 .04	5.18 .04	

1226+023 U,A *3C273	186.49 2.21	185.08 4.61	12/15/77 - 6/16/78 - 12/15/78 -	1/ 2/78 4/78 2/79	0.08 .03 0.10 .03 0.20 .04	0.11 .03 0.13 .03 0.21 .04	0.08 .03 0.11 .03 0.21 .04	0.06 .03 0.09 .03 0.12 .04	0.27 .05 0.34 .06 0.62 .07
			ALL DATA		0.11 .02	0.14 .02	0.11 .02	0.08 .02	0.36 .03
1228+125 (C) *VIRGO CLUSTER	187.02 12.70	181.28 14.43	12/11/77 - 6/12/78 - 12/11/78 -	12/29/77 6/30/78 12/30/78	0.03 .02 0.01 .03 0.03 .04	0.09 .03 0.04 .03 0.03 .04	0.07 .03 0.02 .03 0.06 .02	NF .03 0.01 .03 0.05 .04	0.19 .04 0.06 .05 0.18 .07
			ALL DATA		0.02 .02	0.06 .02	0.06 .02	0.01 .02	0.15 .03
1258-613 GX304-1 U,S,M,A	194.56 -60.33	223.87 -45.35	1/19/78 - 7/21/78 -	2/15/78 6/16/78	2 3	0.34 .02 0.09 .03	0.26 .02 0.14 .03	0.18 .02 0.11 .03	0.03 .03 0.04 .03
			ALL DATA		0.24 .02	0.21 .02	0.16 .02	0.05 .02	0.60 .03
1322-427 U,M,A *CEN A	200.74 -42.71	216.52 -31.22	1/15/78 - 7/16/78 -	2/ 4/78 8/ 6/78	0.71 .03 0.50 .04	0.66 .03 0.45 .03	0.66 .03 0.46 .04	0.27 .03 0.24 .03	0.77 .04 0.32 .05
			ALL DATA		0.63 .02	0.59 .02	0.59 .02	0.26 .02	1.81 .04
1415+253 U,A *NGC 5548	213.91 25.56	201.14 36.61	12/29/77 - 6/30/78 -	1/20/78 7/22/78	0.04 .02 0.08 .03	0.08 .02 0.11 .03	0.07 .02 0.05 .03	NF .02 0.02 .03	2.03 .05 1.42 .06
			ALL DATA		0.06 .02	0.09 .02	0.06 .02	NF .02	0.20 .03
1417-624 M,U,S,A	214.35 -62.47	237.23 -45.17	2/ 2/78 - 8/ 4/78 -	2/28/78 8/29/78	2 3	0.08 .02 1.10 .04	0.01 .02 1.08 .04	0.01 .03 0.54 .04	0.19 .04 0.23 .05
			ALL DATA		0.41 .02	0.36 .02	0.17 .02	0.02 .02	0.92 .03
1516-569 CIR X-1 U,S,M,A,H	229.20 -56.99	243.45 -37.20	8/22/77 - 2/10/78 -	9/ 3/77 3/ 4/78	1 2	0.18 .04 0.51 .03	0.05 .04 0.12 .03	NF .02 0.06 .03	0.06 .04 2.71 .06
			ALL DATA		0.32 .02	0.10 .02	0.00 .02	0.01 .02	0.41 .03
1538-522 U,S,M,A,H	234.67 -52.23	245.39 -31.71	8/22/77 - 2/13/78 -	9/ 4/77 3/ 6/78	1 2	0.34 .04 0.36 .03	0.16 .04 0.15 .03	0.05 .04 0.10 .03	0.17 .06 0.69 .05
			ALL DATA		0.34 .02	0.17 .02	0.09 .02	0.02 .03	0.60 .04
1553-542 S	238.48 -54.27	248.63 -33.09	8/22/77 - 2/16/78 -	9/ 7/77 9/ 9/78	1 2	NF .03 0.05 .03	NF .03 0.14 .04	0.05 .03 0.09 .04	NF .04 0.06 .04
			ALL DATA		0.04 .02	0.07 .02	0.01 .02	0.01 .03	0.18 .06 0.60 .06 0.61 .08
1608-522 M,U,S,H	242.21 -52.30	250.64 -30.66	8/22/77 - 2/18/78 -	9/ 9/77 3/11/78	1 2	1.36 .06 0.18 .03	0.19 .05 0.12 .03	0.05 .03	1.54 .09 0.02 .03 0.33 .05

1617-155 SCO X-1 U,A,M	244.27 -15.52	245.14 5.78	8/22/77 - 2/14/78 - 8/16/78 - ALL DATA	9/10/78 3/13/78 9/11/78 T	3 1 2 3	0.07 33.55 38.15 45.85	0.04 .22 .13 .19	0.03 4.27 .06 .25	0.06 .04 .05 .05	NF NF NF NF	0.16 .07 .26 .15	.04	
1624-490 U,S,M,A,H	246.08 -49.09	252.66 -27.02	8/22/77 - 2/21/78 - 8/22/78 - ALL DATA	9/11/77 3/13/78 9/11/78 T	1 2 3 T	0.63 0.54 0.89 0.65	0.05 .03 .05 .02	0.39 0.37 0.64 0.45	0.14 0.03 .04 .02	NF NF NF 0.02	1.16 .08 .05 .02	.04	
1627-673 U,S,M,A	246.81 -67.36	257.65 -44.65	8/25/77 - 2/23/78 - 8/25/78 - ALL DATA	9/19/77 3/20/78 9/19/78 T	1 2 3 T	0.90 0.88 0.93 0.90	0.04 .03 .04 .02	0.51 0.65 0.66 0.62	0.09 0.09 0.13 0.10	NF NF NF NF	1.51 .07 .05 .02	.04	
1636-536 U,S,M,A,H	249.24 -53.66	255.79 -31.18	8/25/77 - 2/23/78 - 8/25/78 - ALL DATA	9/15/77 3/16/78 9/15/78 T	1 2 3 T	0.60 0.39 0.45 0.44	0.05 .03 .04 .02	0.16 0.16 0.09 0.14	0.09 0.03 0.15 0.12	NF NF NF NF	0.88 .08 .05 .07	.03	
1642-455 GX340+0 U,S,M,A,H	250.54 -45.52	255.31 -23.01	8/25/77 - 2/24/78 - 8/25/78 - ALL DATA	9/13/77 3/15/78 9/14/78 T	1 2 3 T	1.67 2.26 2.53 2.22	.07 .05 .07 .03	0.28 0.57 0.63 0.53	0.06 0.04 0.05 0.03	0.02 0.03 0.17 0.03	0.02 0.03 NF 0.02	2.01 .11 .07 .05	.04
1656+354 HER X-1 U,A,M	254.01 35.42	245.27 57.55	8/22/77 - 2/ 7/78 - 8/ 8/78 - ALL DATA	9/10/77 3/12/78 9/10/78 T	1 2 3 T	0.63 1.16 1.04 1.01	.03 0.02 0.03 .02	0.34 0.63 0.67 0.57	0.10 0.02 0.03 0.02	0.03 0.02 0.11 0.12	0.03 0.02 0.03 0.02	1.05 .05 .04 .05	.03
1657-415 OAO,C,H,E	254.10 -41.70	257.51 -18.89	8/28/77 - 2/26/78 - 8/28/78 - ALL DATA	9/15/77 3/17/78 9/16/78 T	1 2 3 T	0.56 1.27 .77 1.00	.06 .04 .06 .03	0.34 1.10 0.54 0.80	0.07 0.04 0.29 0.36	NF NF NF NF	0.97 .10 .07 .05	.03	
1659-487 GX339-4 M,U,A,H	254.76 -48.71	258.89 -25.80	8/29/77 - 2/27/78 - 3/23/78 - ALL DATA	9/17/77 3/19/78 9/17/78 T	1 2 3 T	1.42 0.20 0.06 0.46	.06 .04 .05 .03	1.28 0.11 NF 0.36	1.21 0.03 0.14 0.03	0.05 0.03 0.05 0.39	0.30 0.10 0.14 0.03	.06 .03 .04 .03	
1658-298	254.75	256.71	8/27/77 - 9/14/77 -	1	0.60	.66	0.24	.05	0.17	.05	NF	1.06	.09

H	-29.87	-7.07	2/26/78 -	3/16/78	2	0.50 .03	0.32 .03	0.14 .03	0.04 .03	0.98 .06
			8/27/78 -	9/14/78	3	0.58 .05	0.10 .05	0.13 .05	NF	0.83 .09
			ALL DATA		T	0.55 .03	0.26 .02	0.16 .02	0.01 .02	0.99 .04
1706-377 U,M	255.14	257.29	8/28/77 -	9/15/77	1	2.66 .07	2.00 .07	1.07 .06	0.15 .06	5.76 .12
	-37.77	-14.89	2/27/78 -	3/17/78	2	2.31 .05	1.71 .04	0.97 .04	0.08 .03	5.00 .07
			8/28/78 -	9/16/78	3	2.56 .07	2.18 .06	1.12 .06	0.12 .04	5.85 .11
			ALL DATA		T	2.45 .03	1.89 .03	1.03 .03	0.11 .02	5.36 .05
1702-363 GX349+2 U,S,M,A,H	255.60	258.12	8/28/77 -	9/16/77	1	2.99 .08	0.59 .06	0.18 .06	0.12 .06	3.77 .12
	-36.36	-13.45	2/27/78 -	3/17/78	2	2.84 .05	0.55 .04	0.05 .04	NF	3.48 .08
			8/29/78 -	9/16/78	3	3.35 .08	0.57 .06	0.14 .06	NF	4.11 .12
			ALL DATA		T	2.96 .04	0.56 .03	0.10 .03	0.01 .03	3.66 .06
1702-429 U,S,M	255.67	258.39	8/29/77 -	9/17/77	1	0.37 .07	0.25 .07	0.15 .06	NF	0.76 .12
	-42.37	-28.02	2/28/78 -	3/18/78	2	0.14 .05	NF	0.02 .04	0.04 .05	0.06 .08
			8/29/78 -	9/17/78	3	0.17 .07	0.17 .07	0.13 .06	NF	0.44 .12
			ALL DATA		T	0.20 .04	0.08 .03	0.08 .03	0.02 .02	0.33 .06
1705-440 U,S,M,A,H	256.33	259.51	8/30/77 -	9/17/77	1	0.24 .07	0.18 .06	0.12 .06	NF	0.52 .11
	-44.04	-21.04	2/28/78 -	3/19/78	2	1.18 .05	0.26 .04	0.05 .04	0.00 .04	1.53 .08
			8/30/78 -	9/18/78	3	0.36 .07	0.59 .06	0.41 .06	0.04 .04	1.34 .12
			ALL DATA		T	0.75 .04	0.33 .03	0.15 .03	NF	1.21 .06
1705-250 H,A ANOVA OPH '77	256.29	257.59	8/28/77 -	9/15/77	1	2.57 .08	1.68 .07	1.14 .06	0.37 .06	5.46 .13
	-25.03	-2.12	2/27/78 -	3/16/78	2	0.40 .04	0.07 .04	NF	NF	0.62 .07
			8/28/78 -	9/15/78	3	0.61 .07	0.10 .06	0.16 .05	0.15 .05	1.14 .11
			ALL DATA		T	0.90 .03	0.40 .03	0.24 .03	0.10 .03	1.75 .05
1728-337 GX354-6 U,S,M,A,E	262.17	263.39	9/ 3/77 -	9/21/77	1	0.21 .13	NF	NF	NF	0.01 .21
	-33.80	-10.46	3/ 5/78 -	3/23/78	2	0.13 .11	NF	0.00 .09	NF	0.04 .17
			9/ 3/78 -	9/21/78	3	NF	0.35 .08	0.14 .08	NF	0.41 .27
			ALL DATA		T	0.14 .07	0.05 .07	0.00 .06	NF	0.16 .12
1728-247 GX1+4 C,U,S,M,A,H	262.24	262.55	9/ 3/77 -	9/20/77	1	1.97 .07	1.62 .06	1.03 .06	0.08 .06	4.58 .12
	-24.71	-1.40	3/ 4/78 -	3/22/78	2	3.26 .06	2.82 .05	1.76 .05	0.11 .04	7.88 .09
			9/ 3/78 -	9/21/78	3	2.86 .09	2.91 .08	2.01 .08	0.23 .06	7.79 .15
			ALL DATA		T	2.85 .04	2.54 .04	1.61 .03	0.13 .03	7.02 .05
1728-169 GX9+9 C,U,S,M,A,H	262.21	262.50	9/ 2/77 -	9/20/77	1	0.58 .05	NF	NF	NF	0.41 .08
	-16.92	6.38	3/ 4/78 -	3/22/78	2	0.78 .04	0.11 .03	NF	0.01 .03	0.67 .06
			9/ 2/78 -	9/20/78	3	1.09 .06	0.07 .05	NF	1.19 .09	NF
			ALL DATA		T	0.76 .03	0.04 .02	NF	0.77 .04	

1730-333 RAPID BURSTER S,H,E	262.53 -33.35 -10.01	263.67 3/ 5/78 - 9/ 3/78 - ALL DATA	9/ 3/77 - 3/23/78 9/21/78 T	9/21/77 3/25/78 3/24/78 T	1 2 3 T	0.38 .11 0.29 .09 0.55 .08 0.64 .06	0.30 .05 0.58 .04 NF 0.39 .05	0.06 .05 0.09 .08 NF 0.07 .05	NF 0.11 .04 NF 0.03 .03	0.85 .17 1.61 .14 0.57 .23 1.11 .10
1735-444 U,S,M,A,H	263.83 -44.42 -21.02	265.28 9/ 5/78 - ALL DATA	9/ 4/77 - 3/ 6/78 - 9/ 5/78 - ALL DATA	9/23/77 3/25/78 3/24/78 T	1 2 3 T	0.81 .04 0.78 .04 0.85 .06 0.80 .02	0.14 .04 0.21 .03 0.20 .05 0.18 .02	0.03 .03 0.06 .03 0.02 .05 0.04 .02	NF 0.03 .03 0.08 .05 0.03 .02	0.58 .07 1.05 .06 1.07 .09 1.03 .04
1735-285 GX359+2 U,M	263.85 -28.45 -5.07	264.57 9/ 5/78 - ALL DATA	9/ 4/77 - 3/ 6/78 - 9/ 6/78 - ALL DATA	9/22/77 3/24/78 5/22/78 T	1 2 3 T	0.24 .08 0.37 .10 0.14 .04 0.14 .04	0.39 .07 0.34 .09 0.29 .04 0.19 .04	0.29 .06 0.16 .05 0.09 .08 0.19 .04	0.14 .06 0.16 .05 0.02 .08 0.04 .04	0.89 .13 0.28 .10 0.93 .16 0.61 .07
1743-322 H	265.60 -32.20 -8.76	266.23 9/ 6/78 - ALL DATA	9/ 6/77 - 3/ 7/78 - 9/ 6/78 - ALL DATA	9/24/77 3/25/78 9/24/78 T	1 2 3 T	1.86 .06 1.17 .06 0.18 .09 1.24 .04	1.14 .06 0.86 .06 0.05 .08 0.77 .04	0.67 .06 0.71 .05 0.08 .08 0.58 .03	0.13 .04 0.22 .05 NF 0.16 .03	3.75 .12 2.75 .10 0.29 .15 2.58 .07
1742-294 NEAR GALACTIC CENTER A,S	265.70 -29.50 -6.06	266.24 9/ 6/78 - ALL DATA	9/ 6/77 - 3/ 8/78 - 9/ 6/78 - ALL DATA	9/24/77 3/25/78 9/24/78 T	1 2 3 T	2.31 .06 2.32 .04 2.70 .08 2.40 .04	1.34 .06 1.28 .05 1.78 .07 1.41 .03	1.19 .05 0.70 .05 1.43 .07 1.04 .03	0.23 .06 0.22 .05 0.59 .07 0.31 .03	4.86 .10 4.34 .09 5.94 .13 4.87 .06
1744-265 GX3+1 U,S,M,A,H	266.20 -26.55 -3.09	266.60 9/ 7/78 - ALL DATA	9/ 6/77 - 3/ 8/78 - 9/ 7/78 - ALL DATA	9/24/77 3/26/78 9/24/78 T	1 2 3 T	1.26 .08 1.05 .06 1.39 .12 1.12 .05	0.45 .06 0.27 .05 0.47 .10 0.34 .04	0.27 .05 0.05 .05 0.42 .10 0.16 .03	0.04 .05 0.07 .05 0.16 .08 0.08 .03	1.94 .12 1.29 .10 2.16 .18 1.54 .07
1745-203 M,U NGC 6440	266.51 -20.37 3.69	266.72 9/ 8/78 - ALL DATA	9/ 6/77 - 3/ 8/78 - 9/ 7/78 - ALL DATA	9/24/77 3/26/78 9/24/78 T	1 2 3 T	0.21 .05 0.23 .04 0.08 .08 0.24 .03	0.17 .04 0.16 .04 0.16 .07 0.19 .03	0.04 .04 0.10 .03 0.02 .06 0.09 .02	NF NF 0.09 .06 0.02 .02	0.45 .08 0.44 .07 0.17 .13 0.46 .05
1746-370 U,S,M,A,E NGC 6441	266.70 -37.61 -13.54	267.29 9/ 7/78 - ALL DATA	9/ 7/77 - 3/ 8/78 - 9/ 7/78 - ALL DATA	9/25/77 3/27/78 9/25/78 T	1 2 3 T	0.40 .04 0.47 .04 0.32 .06 0.40 .03	0.20 .04 0.18 .04 0.01 .06 0.15 .03	0.07 .04 0.07 .04 NF 0.05 .03	NF 0.04 .04 NF 0.01 .02	0.71 .07 0.76 .07 0.32 .10 0.61 .05
1755-338 U,S,M,A,H	268.84 -33.81 -16.31	269.02 3/10/78 - ALL DATA	9/ 9/77 - 3/10/78 - 9/ 9/78 - ALL DATA	9/27/77 3/28/78 5/27/78 T	1 2 3 T	NF 0.50 .06 0.10 .09 0.30 .04	0.17 .05 0.34 .05 0.11 .03 0.30 .03	0.15 .04 0.13 .05 0.15 .08 0.17 .03	NF 0.05 .05 NF 0.05 .03	0.16 .10 0.91 .09 0.30 .15 0.75 .06

1758-250 GX5-1 U,S,M,A,H	269.51 -25.08	269.56 -1.58	9/ 9/77 - 3/11/78 - 9/10/78 -	9/27/77 3/29/78 9/27/78	1 2 3	3.57 3.80 3.35	.06 .05 .11	0.85 0.80 1.12	.04 .03 .09	0.39 0.56 0.49	.04 .03 .09	NF 5.20 4.95	4.84 .07 .17	
			ALL DATA		T	3.69	.03	0.87	.03	0.51	.02	0.17	.02	5.09
1758-265 GX9+1 U,S,M,A,H	269.64 -20.53	269.66 2.97	9/ 9/77 - 3/11/78 - 9/10/78 -	9/27/77 3/29/78 9/27/78	1 2 3	1.99 1.69 1.98	.05 .05 .09	0.34 0.20 0.64	.04 .04 .04	0.12 0.01 0.15	.03 .04 .07	0.01 0.01 0.05	0.03 1.94 NF	2.52 1.94 2.83
			ALL DATA		T	1.82	.03	0.30	.03	0.06	.02	0.03	.02	2.23
1811-171 GX13+1 U,S,M,A	272.91 -17.17	272.80 6.30	9/13/77 - 3/14/78 -	9/30/77 4/ 1/78	1 2	0.20 0.64	.04 .04	0.18 0.15	.03 .03	0.05 0.04	.03 0.06	0.09 0.09	0.03 0.03	1.02 0.81
			ALL DATA		T	0.77 0.75	.08 .02	0.16 0.16	.02	0.04	.02	0.04	.02	0.93
1813-148 GX17+2 U,S,M,A,E	273.39 -14.05	273.24 9.41	9/13/77 - 3/15/78 -	10/ 1/77 4/ 1/78	1 2	3.00 2.71	.04 .04	0.62 0.56	.03 .03	0.10 0.10	.03 0.03	NF 0.07	NF 0.07	3.75 3.42
			ALL DATA		T	3.37 2.95	.08 .03	0.63 0.63	.02	0.11	.02	0.02	.02	3.72
1814+498 U,A,M,H,E *AM HER	273.83 49.84	273.58 73.23	8/26/77 - 2/25/78 -	10/29/77 4/30/78	1 2	0.09 0.11	.01 .01	0.06 0.05	.01 .01	0.01 0.01	.01 0.01	NF NF	NF NF	0.16 0.17
			ALL DATA		T	0.04 0.09	.02 .01	0.07 0.06	.02 0.01	0.01 0.01	.02 0.01	0.03 0.03	.02 0.02	0.12
1820-303 U,M,S,A,E **NGC 6624	275.12 -30.39	274.45 -6.97	9/14/77 - 3/16/78 -	10/ 2/77 4/ 3/78	1 2	1.73 1.54	.04 .05	0.26 0.22	.04 .04	0.04 0.04	.04 0.04	0.05 0.05	0.04 0.04	2.07 1.85
			ALL DATA		T	2.45 1.71	.10 .03	0.43 0.24	.08 .03	0.02 NF	.08 NF	0.10 0.01	.06 .03	.07
1822-371 U,A,M,H	275.55 -37.12	274.55 -13.71	9/14/77 - 3/16/78 -	10/ 2/77 4/ 3/78	1 2	0.64 0.42	.03 .04	0.28 0.19	.03 .04	0.04 0.02	.03 0.02	NF 0.04	NF 0.04	1.00 0.62
			ALL DATA		T	0.57	.02	0.29	.02	0.05	.02	0.01	.03	1.99
1822-000 U,A,S,M,H	275.70 -0.04	276.21 23.34	9/15/77 - 3/17/78 -	10/ 5/77 4/ 5/78	1 2	0.18 0.24	.02 .03	0.11 0.07	.02 0.03	0.02 0.10	.02 0.03	NF 0.10	NF 0.03	0.30 0.39
			ALL DATA		T	0.19	.05	0.06	.05	0.02	0.05	0.05	0.05	0.25
1833-076 SCT X-1 H,A	278.35 -7.74	278.59 15.51	9/18/77 - 3/20/78 -	10/ 7/77 4/ 7/78	1 2	1.22 0.40	.03 .03	0.92 0.23	.03 0.03	0.29 0.15	.03 0.03	NF 0.05	NF 0.05	2.47 0.79
			ALL DATA		T	0.21	.05	0.27	.05	0.28	.05	0.15	.05	0.75

1837+049 SER X-1 U,S,M,A	279.37 28.15 4.99	280.60 3/21/78 - 4/10/78	9/19/77 - 10/ 9/77	1	0.54 0.51 0.53	0.03 NF .02	NF 0.04 NF	NF 0.04 NF	0.03 0.05 0.04	0.02 0.03 0.05	0.03 0.04 0.05	0.53 0.54 0.55	0.04 0.05 0.05	
1850-087 A,S,E *NGC 6712	282.59 -8.76 14.18	282.84 3/24/78 - 4/11/78	9/23/77 - 10/11/78	1	NF 0.03 NF	0.03 0.07 0.04	0.05 0.03 0.02	NF 0.03 NF	0.03 0.03 0.02	0.02 0.03 0.02	0.02 0.03 0.05	0.02 0.03 0.10	0.05 0.06 0.05	
1907+097 U,A,M,H,E	286.95 9.53 31.87	289.79 3/30/78 - 9/29/78	9/28/77 - 10/19/77	1	0.34 0.40 0.30	0.02 0.03 0.05	0.20 0.30 0.30	0.02 0.03 0.05	0.10 0.09 0.16	0.02 0.03 0.05	NF 0.04 NF	0.67 0.79 0.76	0.04 0.05 0.09	
1908+005 AOI X-1 U,A,S,M,H	287.18 0.50 22.89	288.70 3/30/78 - 9/28/78	9/28/77 - 10/17/77	1	0.33 0.27 0.30	0.02 0.03 0.05	0.32 0.21 0.32	0.02 0.03 0.05	0.16 0.07 0.23	0.02 0.03 0.05	0.05 0.03 0.02	0.83 0.54 0.54	0.04 0.05 0.05	
1916-053 U,A,S,M,E	289.04 -5.33 16.87	289.84 3/31/78 - 9/30/78	9/30/77 - 10/18/77	1	0.20 0.28 0.29	0.02 0.03 0.05	0.15 0.17 0.11	0.02 0.03 0.05	0.04 0.05 0.08	0.02 0.03 0.05	NF 0.04 NF	0.41 0.51 0.41	0.04 0.05 0.04	
1954+319 (D) U,M,A	298.48 31.94 51.50	310.54 4/16/78 - 10/16/78	10/15/77 - 11/13/77	0.04	0.03 0.13 0.14	0.06 0.03 0.02	0.06 0.03 0.08	0.03 0.06 0.02	0.05 0.05 0.05	0.02 0.03 0.02	NF 0.04 NF	0.16 0.15 0.16	0.05 0.05 0.05	
1956+350 CYG X-1 U,M,A	299.12 35.07 54.29	312.03 4/18/78 - 10/17/78	10/17/77 - 11/17/77	8.45	0.04 6.78 6.82	8.58 6.67 7.40	0.05 0.04 0.05	9.69 7.61 7.87	0.05 0.05 0.07	3.62 2.89 3.40	0.04 0.04 0.05	26.77 21.07 22.11	.08 .08 .11	
2030+407 CYG X-3 U,M,A	307.64 40.79 56.95	327.97 5/ 2/78 - 10/31/78	10/31/77 - 12/ 3/77	1.48	0.02 2.67 3.21	0.91 1.49 2.22	0.02 0.03 0.04	0.43 1.49 2.22	0.02 0.03 0.04	0.08 0.06 0.68	0.02 0.03 0.03	2.83 4.72 6.32	0.04 0.05 0.07	
2041-107 (E) A	310.19 -11.56	302.53 6.58	10/20/77 - 5/ 8/78	0.05	0.02 0.02	0.01 .03	0.03 0.01	0.03 0.01	0.04 0.04	0.03 0.03	0.04 0.04	0.09 0.05	0.04 0.05	

*MKN 509		10/20/78 - 11/7/78	NF	0.06	.04	NF	0.02	.04	NF
	ALL DATA		0.02	.02	0.02	0.01	.02	0.04	.02
2142+380	325.65	346.06	11/22/77 - 12/16/77	1.09	.03	0.17	.02	0.03	.02
CYG X-2	38.09	47.97	5/23/78 - 6/19/78	1.36	.03	0.22	.02	0.00	.02
U,A,M			11/22/78 - 12/16/78	1.45	.05	0.25	.04	0.05	.04
	ALL DATA		1.25	.02	0.20	.01	0.02	.01	NF
									1.50 .03

NOTES:

- (A) SMC X-3 AND SMC X-2 ARE SO CLOSE TOGETHER THAT THEY COULD NOT BE UNAMBIGUOUSLY SEPARATED BY THE HEAD-1 A4 LED COLLIMATORS.
- (B) X PER WAS DETECTED IN HERO-1 A4 POINTED OBSERVATIONS. SEE WORRALL ET AL. 1981. DATA FROM DETECTOR LED1 ONLY WAS USED IN DETERMINING THE COUNT RATES AS PART OF THE LED2 DATA WAS ACCUMULATED WITH THE CRAB NEBULA ALSO IN THE FIELD OF VIEW.
- (C) THE VIRGO CLUSTER WAS DETECTED IN HERO-1 A4 SCANNING AND POINTED OBSERVATIONS BY LEA ET AL. 1981.
- (D) DATA FROM DETECTOR LED2 ONLY WAS USED IN DETERMINING THE COUNT RATES FOR 1954+319 AS MOST OF THE LED1 DATA WERE ACCUMULATED WITH CYG X-1 ALSO IN THE FIELD OF VIEW.
- (E) MKN 509 WAS DETECTED IN HERO-1 A4 POINTED OBSERVATIONS BY DIL ET AL. 1981.

TABLE 4: RECORD STRUCTURE OF CATALOG FILE (NON-ASCII)

BEGINNING WORD #	CONTENT	FORMAT	NO. OF WORDS
1	Source designation numbers (approximate RA and DEC)	I	2
3	Source name	S	10
13	Right ascension (degrees)	F	2
15	Declination	F	2
17	Ecliptic longitude	F	2
19	Ecliptic latitude	F	2
21	Number of epochs of data for this source (NREC)	I	1
22+27*N	Begin date of scan epoch (M/D/Y)	I	3
25+27*N	End date of scan epoch (M/D/Y)	I	3
28+27*N	Epoch code	I	1
29+27*N	Fitted on-axis count rate and 1 sigma error - A channel	F	4
33+27*N	Fitted on-axis count rate and 1 sigma error - B channel	F	4
37+27*N	Fitted on-axis count rate and 1 sigma error - C channel	F	4
41+27*N	Fitted on-axis count rate and 1 sigma error - D channel	F	4
45+27*N	Fitted on-axis count rate and 1 sigma error - A+B+C channels	F	4

Notes: Beginning word #: For each source N ranges from 1 to NREC

Content: The information for each source contains data for 3 or 4 epochs where the last epoch is the superposition of all data from the entire mission. NREC is defined to be the total number of epochs.

The data from the entire mission is indicated with begin and end scan dates of 0/0/00.

The epoch code is 0 for all non-central galactic plane region sources and is 9 for the entire-mission data from central galactic plane region sources.

A negative flux result is indicated by a count rate of -0.01. The 1 sigma error in this case is arbitrarily set to 0.00.

Format: I - integer, S - ASCII string (null terminated)

F - floating point

Total record length:

Length is 102 words if NREC=3 and 129 words if NREC=4

Appendix A

Reprinted from The Astrophysical Journal Supplement Series, Vol. 54,
pages 581-617, 1984.

4

Users please check your local
technical library. Copy will
not be duplicated by NSSDC.

DUMP OF TAPE S0-1

FILE	1 RECORD	1 LENGTH	8190 BYTES
(0)	FFFDD0012	43544153	43494900 00000000 00040000 00450124 8F4C18DC 16700C16 00000100 401001A
(40)	0DD0D909	09090909	09090920 20202020 20434F55 4F542052 41544520 28435453 2F532920 20203120
(80)	53494740	41204552	524F521D 09090920 20202020 2045434C 49505449 43090909 09092020 20202020
(120)	4348414E	4E454C20	434F4445 202D4150 50524F58 49404154 45524759 2042414E 44202868 77-0759-04E
(160)	65562900	534F5552	4345204E 414D4509 52412831 39353029 20204C4F 4E474954 55444520
(200)	20534341	E204441	54455320 20202020 20204649 54202020 20202020 20412020 20202020
(240)	20202020	20422020	20202020 20202020 43202020 20202020 20202020 20202041 28422843
(280)	0D202009	09202020	20202044 45432020 20202020 20202028 34302038 30292020 20283830
(320)	20202020	32352920	28313320 38302900 00003030 35302D37 32372028 41292020 20202020
(360)	2D313830	29202020	28313320 38302900 00003030 35302D37 32372028 41292020 20202020
(400)	2031322E	35382020	2033132 2E303720 20203130 2F31312F 37372020 2031312F 32312F37 37202020
(440)	20202020	20202020	20204E46 20202020 20202020 20202020 20202020 3038202E 30322020
(480)	2020204E	46202020	20202020 302E3131 00534D43 20582D33 20202020 20202020 20202020
(520)	20202020	373237	31202020 2D36342E 33312F37 38202D20 2020302E 30352F32 332F3738
(560)	20202020	20202030	2E303320 2E303320 2020302E 3038202E 30340220 30322020 2020204E 466202020
(600)	20202020	20204E46	20202020 20202030 2E313020 2E31340D 532C4120 20202020 20202020 20202020
(640)	20202020	20202020	20202020 20202020 31302F31 31302F31 312F3738 20202031 312F3231
(680)	2F373820	20202020	20202020 2020302E 30332020 20302E30 32202020 32202020 20204E46
(720)	20202020	20202030	2E303320 2E303320 2020302E 3038202E 30340220 20202020 20202020 20202020
(760)	20202020	20202020	20202020 20202020 30322020 30322020 30322020 302E3138 20202020
(800)	20202020	20202020	20202020 20202020 30322020 30322020 30322020 302E3138 20202020
(840)	2E303320	2E303520	2020302E 30312020 20302E31 30202E30 3800D30 30353220 37333920
(880)	28412920	20202020	20202020 20203133 20203320 312E3736 20202031 302F3130 2F373720
(920)	2D203131	2F32312F	37372020 20202020 20302E32 37202E30 32202030 302E3138 202E3037
(960)	20204620	2020302E	20204620 2020302E 30322020 30322020 30322020 302E3138 2020582D
(1000)	32202020	20202020	20202020 20202020 2D37322E 39352020 20203634 2E363220 20202034 2F31312F
(1040)	37382020	2020352F	32332F37 38202020 20202020 302E3031 30202E30 30202E30 30202E30 30202E30 204E4620
(1080)	20202020	20202020	4E462020 20202020 20202020 20202020 20202020 20202020 20202020 20202020
(1120)	20202020	20202020	20202020 20202020 20202020 20202020 20202020 20202020 20202020
(1160)	31302F37	38202020	31312F32 312F3738 20202020 20202020 20202020 20202020 20202020 20202020
(1200)	4E462020	20202020	20302E30 33202E30 33202E30 33202E30 33202E30 33202E30 33202E30 33202E30
(1240)	20202020	20202020	20202020 20202020 20202020 20202020 20202020 20202020 20202020
(1280)	414C4C20	44415441	20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020
(1320)	20302E30	37202E30	35202D20 302E3031 20202020 20202020 20202020 20202020 20202020 20202020
(1360)	303380D0	30313135	28353334 20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020
(1400)	32202020	30320220	32202020 32202020 32202020 32202020 32202020 32202020 32202020 32202020
(1440)	30322020	20302E32	35202E30 320E3034 20202020 20202020 20202020 20202020 20202020 20202020
(1480)	3933202E	30340055	2C532C4D 2C482020 20202020 20202020 20202020 20202020 20202020 20202020
(1520)	3922E3734	20202020	372F3236 2F373820 20202020 20202020 20202020 20202020 20202020 20202020
(1560)	32202020	33202E30	302E3033 20202020 20202020 20202020 20202020 20202020 20202020 20202020
(1600)	20302E31	302E3033	320E3033 20202020 20202020 20202020 20202020 20202020 20202020 20202020
(1640)	20202020	2020414C	34203231 2020414C 54412020 20202020 20202020 20202020 20202020 20202020 20202020
(1680)	302E3431	20203032	20203030 20203031 31352D37 33372020 20202020 20202020 20202020 20202020 20202020
(1720)	20202020	302E3630	202E3033 000D3031 31352D37 33372020 20202020 20202020 20202020 20202020 20202020
(1760)	39342020	302E3313	2E353620 20203130 2F203820 37372020 2031312F 32322F37 37202020 20202020 20202020
(1800)	46202020	302E3325	302E3032 20203200 2E31320 2E31320 2E31320 30322020 20202020 20202020 20202020
(1840)	37332E37	31202020	302E3329 20203320 20203320 20203320 20203320 20203320 20203320 20203320 20203320
(1880)	20202020	20203030	2E353020 2E303220 20203020 20203020 20203020 20203020 20203020 20203020 20203020
(1920)	20202020	20203030	2E353020 2E303220 20203020 20203020 20203020 20203020 20203020 20203020 20203020
(1960)	20202020	20203030	2E383220 2E303400 552C412C 40202020 20202020 20202020 20202020 20202020 20202020 20202020
(2000)	20202020	20202020	2020302E 30332020 30332020 30332020 30332020 30332020 30332020 30332020 30332020
(2040)	20202020	20202020	3439202E 30332020 30332020 30332020 30332020 30332020 30332020 30332020 30332020
(2080)	20202030	2E303520	2E303320 2020302E 3934202E 30350D20 20202020 20202020 20202020 20202020 20202020
(2120)	20202020	20202020	20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020
(2160)	20202020	20202020	20202020 20202020 20202020 20202020 20202020 20202020 20202020 20202020
(2200)	2E303120	30312020	30312020 30312020 30312020 30312020 30312020 30312020 30312020 30312020
(2240)	20202020	20203029	20203029 372F3320 302E3035 35202E30 302E3036 35202E30 302E3036 35202E30 302E3036
(2280)	2F32372F	37372020	20202020 302E3035 35202E30 302E3035 35202E30 302E3035 35202E30 302E3035 35202E30

High Energy
 X-Ray Source
 Catalog
 77-0759-04E
 D-Welch

High Energy
 X-Ray Source
 Catalog
 77-0759-04E
 D-Welch

(	2320)	2E31332U	20202020	20302E34	33202E30	380552C	412C4D20	20202020
(	2360)	20202020	20202020	2034312E	33332020	20203232	E323920	20202032
(	2400)	2020322F	32352F37	38202020	20202020	302E3231	202E3032	20202030
(	2440)	2020302E	3039202E	30322020	20302E30	32202E30	302E3339	20202034
(	2480)	5320434C	55353454	52202020	20202020	20202020	2020382F	20382F37
(	2520)	38202D20	30382F32	372F3738	20202020	20202020	20203320	2020302E
(	2560)	30332020	20302E31	35202E30	33202020	302E3031	202E3033	20202030
(	2600)	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(	2640)	44415441	20202020	20202020	20202020	20202020	20202020	414C4C20
(	2680)	30202E30	32202020	302E5132	20202032	20202030	2020302E	303300D0
(	2720)	30333532	28333539	20284229	20202020	20202030	382E3036	36322E35
(	2760)	20382F32	322F3737	202D2020	382F3331	2F373720	20202020	3038202E
(	2800)	203J2E30	36202E30	36202020	302E3037	20202030	E303420	2020302E
(	2840)	30390D55	2C412C53	2C482020	20202020	20202020	2020330	2E393020
(	2880)	20202020	322F3131	2F373820	20202033	2F37312F	20202020	20302E30
(	2920)	33202020	302E3033	20253033	20202030	2E303420	20202020	20302E31
(	2960)	31202E30	36002A58	20504552	20202020	20202020	20202020	30352020
(	3000)	20202020	20202038	2F31332F	37382020	2020382F	3312F37	20202020
(	3040)	202E3034	20202020	204E4620	20202020	2020302E	30342020	20202031
(	3080)	302E3034	202E3037	0D202020	20202020	20202020	20202020	302E3430
(	3120)	20202020	20202020	20414C4C	20202020	20202020	20202020	20202020
(	3160)	2E303520	2E3032E	30320E	3032020	20302E30	33202E30	20204E46
(	3200)	20202030	2E313020	0D303533	20202020	20202020	20202020	38322E38
(	3240)	38202020	2038332E	34302020	2020392F	20332F37	37202020	312F3737
(	3280)	20203131	2E313220	2E303920	2020372E	38342020E	30382020	203622E35
(	3320)	202E3036	20203235	2E353520	2E313420	2A435241	42204E45	42554C41
(	3360)	31203938	20202020	2D31233	32372020	3420220	352F3738	332F3232
(	3400)	20202020	2031312E	3136202E	30382020	31283231	39202020	372E3037
(	3440)	2E333420	2E303520	2053362E	3938202E	31320020	20202020	20202020
(	3480)	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(	3520)	20202020	20202020	31312E33	38202E31	31202020	382E3738	20202038
(	3560)	2020322E	3332202E	30372020	32372E33	3420220	380D2020	20202020
(	3600)	20202020	20202020	20204E	46202020	20202020	2020414C	4C204441
(	3640)	20202020	20202020	20202031	312E3230	202E3035	20202038	2E303520
(	3680)	30342020	20322E32	32202E30	33202032	362E3538	202E3038	0D0D3035
(	3720)	20202020	20202020	2038332E	32302020	20335358	2E393920	20202038
(	3760)	32352F37	38202E30	20202020	32372020	202E3033	202E3031	20202030
(	3800)	3039202E	30312020	20204E	46202020	20202020	20203631	202E3030
(	3840)	20202020	20202020	20202020	36362E34	30202020	3238372E	32382020
(	3880)	20372F32	382F3738	20202020	20202020	20202020	20203030	2E303120
(	3920)	20302E30	37202E30	31202020	302E3031	202E3031	20202030	2F33222F
(	3960)	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(	4000)	31202020	302E3036	202E3031	20202020	20202020	3234202E	30312020
(	4080)	20202020	20202020	20202020	20202020	2020302E	3531202E	30320D20
(	4120)	41544120	20202020	20202020	20202020	20202020	3139202E	30312020
(	4160)	202E3031	20202030	2E303720	2E303120	20202020	552C412C	53202020
(	4200)	35333528	32363220	20202020	20202020	20202020	20372F32	392F3738
(	4240)	392F2034	2F373720	2D202039	2F32322F	37372020	20202020	32202E30
(	4280)	302E3131	202E3033	20202030	2E313120	2E303320	20202020	4C4C2044
(	4320)	360D412C	53202020	20202020	20202020	20202020	38202E30	31202020
(	4360)	20202033	2F20362F	37382020	2020332F	32342F37	38202020	302E3232
(	4400)	20202030	2E3035820	2E303320	20203020	20332020	20202020	302E3032
(	4440)	202E3035	0D202020	20202020	20202020	20202020	20202020	302E3033
(	4480)	20202020	2020392F	20352F37	38202020	20392F32	322F3738	20342020
(	4520)	2E303520	2020302E	3333202E	30352020	20302E30	38202E30	20302E33
(	4560)	2E363620	2E30396D	20202020	20202020	20202020	32382020	20202030
(	4600)	20202020	20202020	414C4C20	44415441	20202020	20202020	20202020
(	4640)	3131202E	30322020	20302E31	33202020	20302E31	33202E30	302E3134
(	4680)	2020302E	33322020	30330D9D	20363134	20392F32	322F3738	20342020
(	4720)	20202020	3933202E	36202020	32392F31	332F3737	20202031	20202030
(	4760)	2020302E	31352020	30332020	20302E31	31202E30	33202020	20202030
(	4800)	2E303320	20203020	3330202E	30340055	2C532C4D	2C412C48	20202020
(	4840)	2E313420	20202031	342E331	20202020	332F3135	2F373820	20202034
(	4880)	20202020	20302E31	35202E30	20302E31	20302E30	2F20322F	37382020
(	4920)	4E462020	20202020	20302E33	31202E30	350D2020	20202020	20202020

	FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ PERM	ERROR ZERO B	SUMMARY	INPUT RETRIES	#RECS.	TOTAL#		
	FILE	2 RECORD	1 LENGTH	8190 BYTES					0	0		
	FILE	RECORD	LENGTH	BYTES					0	0		
(	(	0)	FFFDD012	43544153	43494900	00000000	00040000	00450124	8F4C18DC	167D0C16	00000100	4001001A
(	(	40)	09090909	09090920	09090920	09090920	09090920	4E544052	41544520	28435453	2F532920	20203120
(	(	80)	5349474D	41204552	524F523D	09090920	20202020	2045434C	49505449	43090909	09092020	20202020
(	(	120)	4348414E	4E454C20	434F4445	20204150	50524F58	494D4154	4520454E	45524759	2042414E	4420286B
(	(	160)	6556290D	534F5552	4345204E	414D4509	20202020	52412831	39353029	20204C4F	4E474954	55444520
(	(	200)	20202020	20534341	4E204441	54455320	20202020	20204649	54202020	20202020	20412020	20202020
(	(	240)	20202020	20420200	20202020	20202020	43202020	2020404C	41544954	55444509	09092020	20202020
(	(	280)	09202020	09202020	20202020	20202020	45432020	41544954	55444509	09092020	20202020	434F4445
(	(	320)	20202020	2831332D	32352920	20202020	2832352D	34302920	20202028	34302038	30292020	20283830
(	(	360)	20313830	29202020	2831332D	3830290D	00003030	35302037	32372028	41292020	20202020	20202020
(	(	400)	20313220	35382020	20333132	2E303720	20203130	2F31312F	3737202D	2031312F	32312F37	37202020
(	(	440)	2020204E	46202020	20202020	20203020	20203030	2F303220	2E303620	2020302E	3038202E	30322020
(	(	480)	20202020	20202020	20202020	20203034	20203131	0D534043	20582033	20202020	20202020	20202020
(	(	520)	20202020	37322E37	31202020	2036342E	33352020	2036342E	31312F37	38202020	20352F32	332F3738
(	(	560)	20202020	20202020	20202030	2E313020	20203020	2020302E	3034202E	30322020	2020204E	466202020
(	(	600)	20202020	20204E46	20202020	20202030	2E313020	2E31340D	532C4120	20202020	20202020	20202020
(	(	640)	20202020	20202020	20202020	20202020	20202020	20202020	31302F31	312F3738	202D2031	312F3231
(	(	680)	2F373820	20202020	20202020	20203020	20332020	20332020	20302E30	32202E30	32202020	20204E46
(	(	720)	20202020	20202030	20203020	2020302E	2020302E	20304020	20340020	20202020	20202020	20202020
(	(	760)	20202020	20202020	20202020	20202020	20202020	20202020	4C4C2044	41544120	20202020	20202020
(	(	800)	20202020	20202020	20202020	20202020	20302E30	33202E30	35202020	302E3034	202E3034	20202030
(	(	840)	2E303320	2020302E	3030202E	30312020	26302E31	30202E30	3800D030	3035322D	37333920	
(	(	880)	26412920	20202020	20202020	20203033	2E323320	20203331	312E3736	20202031	302F3130	2F373720
(	(	920)	20203131	2F32312F	37373200	20202020	20202020	20302E32	37202E30	32202020	302E3138	202E3037
(	(	960)	20202020	204E4620	20202020	2020302E	30322020	30322020	30202E35	30202E31	320D534D	43205820
(	(	1000)	32202020	20202020	20202020	20202020	2D37322E	39352020	202D3634	2E363220	20202034	2F31312F
(	(	1040)	37382020	2020352F	323332F37	38202020	20202020	20202020	302E3031	202E3038	20202020	204E4620
(	(	1080)	20202020	4E462020	20202020	2020204E	46202020	20202020	302E3034	202E3134	0D532C41	
(	(	1120)	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	2031302F
(	(	1160)	31302F37	38202D20	31312F32	312F3738	20202020	20202020	20202020	20202020	20202020	20202020
(	(	1200)	4E462020	20202020	20302E30	33202E30	20202020	20202020	20202020	20202020	20202020	20202020
(	(	1240)	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(	(	1280)	414C4C20	44415441	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(	(	1320)	20202020	302E3032	302E3031	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(	(	1360)	30380D00	28363334	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(	(	1400)	35202020	342F3738	20202020	322F3231	2F373820	20202020	20202020	20202020	20202020	20202020

	FILE	INPUT	DATA RECORDS	MAX. SIZE	READ	ERROR	SUMMARY	INPUT	RETRIES	
	R E C S .	I N P U T			Z E R O	B	S H O R T	U N D E F .	# R E C S .	T O T A L #
E O J	4	3	4	8190	0	0	0	0	0	0
START TIME	07/15/85	DUMP STOPPED AFTER FILE	4	# OF PERMANENT READ ERRORS	0					
STOP TIME	07/15/85									
(400)	D70A3F7A	E1474082	8F5C3FCC	CCCC0009	001E004E	000A0012	004E0003	404A3D70	3FCFFFFFF	401C28F5
(440)	3FCCCCCC	40147AE1	3FCCCCCC	3FCCCCCC	40800000	40147AE1	00000000	00000000	00000000	00000000
(480)	0009403D	70A33F51	EB854026	66663F51	EB853F51	EB853F51	EB854073	3F7AE147	3F7AE147	33333F7A
(520)	E14707A2	013F2000	00000000	00000000	00000000	00000000	0004312	A7AE421F	F0A34313	68A34233
(560)	00000004	004000CB	00000040	00000040	00000040	00000040	0003FA3	D70A3F7A	C28F3F7A	E1473FF5
(600)	E147BF28	F5C20000	00004028	F5C23FCC	CCCC0004	0010004	0005000F	004E0000	3F7AE147	3F7AE147
(640)	3F7AE147	3F7AE147	00000000	3F7AE147	3F7AE147	402666666	3F7AE147	0000A010	004E000B	3F7AE147
(680)	0000004E	00004080	00003FF5	C28F4047	AE143FF5	C28F401E	B8513FCC	0003FCC	CCC40E6	
(720)	66664017	0A3D0000	00000000	00000000	00000000	4023D70A	3F51EB85	40147AE1	3F51EB85	3FCCCCCC
(760)	3F51EB85	3F51EB85	40428F5C	3F7AE147	07A4015E	43594720	582D3100	00000000	00000000	00000000
(800)	00000000	431281EB	422311EB	4313907A	42364A3D	0004000A	0011004D	000B0011	004D0000	41873333
(840)	3F7AE147	3F7AE147	418947AE	3FCCCCCC	41980A3D	3F7AE147	421AC51E	40147AE1	00040012	
(880)	004E005	0012004E	000416C	7AE13FCC	CCCC416A	B8513FA3	D70A4179	C28F3FCC	CCCC412E	3D703F43
(920)	D70A4215	11EB4014	7AE100A	0011004E	00B0011	004E0000	41601EB8	3F51EB85	41766666	3F5C28F
(960)	417DEB85	4011EB85	41366666	3FCCCCCC	42161C28	401C28F5	00000000	00000000	00000000	00000000
(1 000)	417AE13F7A	E147417A	3D703F7A	E1474189	1EB83F7A	E1474134	CCCC3F51	EB854217	C51E3FCC	CCCC07EE
(1 040)	01974359	000A001F	004D000C	0003004D	00000000	0004313	3A3D4228	CA3D4314	7F854238	F3330004
(1 080)	00000000	408A3D70	47AE3FA3	D70A0005	0002004E	00060003	004E0000	412A851	EB85406E	147A3F51
(1 120)	7AE13F51	EB85412D	47AE3FA3	D70A0005	00040000	00000000	00000000	00000000	00000000	00000000
(1 160)	3F7AE147	408A3D70	3F7AE147	3F5F5C28F	3F7AE147	414B851E	3FCCCCCC	000A001F	0004E000C	0003004E
(1 200)	00004133	5C283F43	D70A4123	851E3FA3	D70A40E1	47AE3F7A	E1474021	47AE3F7A	E1474165	1EB84011
(1 240)	EB850000	00000000	40147AE1	3F28F5C2	41428851	3F7AE147	4116147A	3F51EB85	4091EB85	3F28F5C2
(1 280)	40147AE1	3F28F5C2	4313587A	416947AE	0004000A	0014004D	004D0000	00000000	00000000	00000000
(1 320)	4313630A	C1B8F5C2	4313587A	416947AE	0004000A	0014004D	004D0000	00000000	00000000	00000000
(1 360)	3F7AE147	3F7AE147	3F7AE147	3F7AE147	3F7AE147	3F7AE147	3F7AE147	40170A3D	3F7AE147	4117D70A
(1 400)	0008004E	0003F51	E1473F7A	E1473F28	F5C23F7A	E1473F28	F5C23F7A	E1473F51	D70A3F7A	E1473FCC
(1 440)	CCCC3FCC	CCCC000A	0114004E	00B0007	004E0000	004E0000	00000000	3F7AE147	3F7AE147	3F7AE147
(1 480)	00000000	3F51EB85	3F7AE147	BF28F5C2	00000000	00000000	00000000	00000000	BF28F5C2	BF28F5C2
(1 520)	EB853F51	EB853F51	EB853F28	F5C23F51	E8853FA3	D70A3F51	E8853FA3	CCCC3F7A	CCCC3F7A	CCCC3F7A
(1 560)	4720582D	32000000	00000000	00000000	00004314	5A664226	170A4315	A0F5422F	F8510004	017C4359
(1 600)	004D0004	0012004D	00040111	70A33F7A	E147402B	851E3F51	E1473F51	E1473F51	E1473F51	000B0016
(1 640)	00004114	F5C23F43	D70A0005	0017004E	0060013	004E0000	4115C28F	3F7AE147	40381EB	3F51EB85
(1 680)	00000000	3F51EB85	00000000	41199959	3F7AE147	40381EB	3F51EB85	3F51EB85	3F51EB85	3F51EB85
(1 720)	33333FCC	CCCC4040	0003FA3	D70A3FCC	CCCC3F51	E8853FA3	D70A411C	28F54014	7AE1000	7AE1000
(1 760)	00000000	00000000	41140000	41180000	3F51EB85	3F51EB85	3F51EB85	3F28F5C2	3F28F5C2	3F28F5C2
(1 800)	00000000	41180000	3F7AE147							

EOJ DUMP STOPPED AFTER FILE 4 # OF PERMANENT READ ERRORS 0

START TIME 07/15/85 12:17:06

STOP TIME 07/15/85 12:17:34